

**WHAT IS CLAIMED IS:**

1. A subcutaneously assembled in place orthopedic construct, comprising:
  - a first support structure, attached to the spine;
  - a second support structure, attached to the spine; and
  - 5 a cross bar, which connects the first support structure to the second support structure to form an orthopedic construct;
    - wherein the cross bar is attached to the first and second support structures subcutaneously.
2. A subcutaneously assembled in place construct as in Claim 1, wherein  
10 the first support structure comprises a hardenable media.
3. A subcutaneously assembled in place construct as in Claim 2, wherein  
the second support structure comprises a hardenable media.
4. A subcutaneously assembled in place construct as in Claim 3, wherein  
the cross bar comprises a hardenable media.
- 15 5. A subcutaneously assembled in place construct as in Claim 1, further  
comprising a first cross tie connecting the cross bar to the first support, and a second  
cross tie connecting the cross bar to the second support.
6. A subcutaneously assembled in place construct as in Claim 1, wherein  
the cross bar includes a first aperture for receiving the first support, and a second  
20 aperture for receiving the second support.
7. A subcutaneously assembled in place construct as in Claim 1, further  
comprising a first bone anchor connecting the first support structure to a first vertebral  
body, and a second bone anchor connecting the first support structure to a second  
vertebral body.
- 25 8. A subcutaneously assembled in place construct as in Claim 7, wherein  
the first support structure extends through an aperture in the first bone anchor.
9. A subcutaneously assembled in place construct as in Claim 1, wherein at  
least the first support structure comprises:
  - an outer wall, defining a cavity therein;
  - 30 a plurality of reinforcing fibers in the cavity; and

a hardenable media for bonding with the reinforcing fibers to form the support structure;

wherein the hardenable media is hardened while the support structure is positioned within the body of a patient to create the orthopedic construct.

5        10. A subcutaneously assembled in place construct as in Claim 9, wherein the hardenable media comprises an epoxy.

11. A subcutaneously assembled in place construct as in Claim 9, wherein the hardenable media comprises polyurethane.

10        12. A subcutaneously assembled in place construct as in Claim 9, wherein the reinforcing fibers comprise carbon fibers.

13. A subcutaneously assembled in place construct as in Claim 9, wherein the reinforcing fibers comprise graphite fibers having a diameter within the range of from about 0.003 inches to about 0.007 inches.

15        14. A subcutaneously assembled in place construct as in Claim 9, wherein the reinforcing fibers are provided in at least one bundle having within the range of from about 3,000 to about 12,000 fibers.

15        15. A subcutaneously assembled in place construct as in Claim 14, comprising from about 30 to about 60 bundles of fibers.

20        16. A subcutaneously assembled in place construct as in Claim 9, wherein the reinforcing fibers have a Tow tensile strength within the range of from about 5,000 Mpa to about 7,000 Mpa.

17. A subcutaneously assembled in place construct as in Claim 9, wherein the reinforcing fibers have a Tow tensile modulus within the range of from about 250 Gpa to about 350 Gpa.

25        18. A subcutaneously assembled in place construct as in Claim 9, further comprising at least one reinforcing sleeve within the cavity.

19. A subcutaneously assembled in place construct as in Claim 9, wherein the reinforcing sleeve comprises a braided carbon fiber wall.

30        20. A method of treating the spine, comprising the steps of:  
                    attaching a first support structure to the spine;  
                    attaching a second support structure to the spine; and

attaching a cross bar to the first and second support structures;  
wherein at least the attaching a cross bar step comprises advancing at  
least a portion of the cross bar between the spine and a muscle layer.

21. A method of treating a patient, comprising the steps of:  
5       securing a first rod at a first site in the patient;  
securing a second rod at a second site in the patient;  
introducing a curable media in between the first and second rods to form  
a cross link; and  
linking the first rod to the second rod by permitting the media to cure.  
10      22. A method of treating a patient as in Claim 21, wherein the introducing  
step comprises introducing the curable media into a tubular media support structure  
extending between the first and second rods.  
23. A method of treating a patient as in Claim 22, wherein the support  
structure comprises a balloon.  
15      24. A method of treating a patient as in Claim 21, wherein the method is  
accomplished percutaneously.  
25. A method as in Claim 21, wherein the linking step comprises positioning  
a balloon between the first and second rods and introducing the media into the balloon.

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